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Spiritual coping, religiosity and quality of life: A study on Muslim patients undergoing haemodialysis

MOHSEN SAFFARI,[1,2] AMIR H PAKPOUR,[3] MARYAM K NADERI,[2] HAROLD G KOENIG,[4,6] DONIA R BALDACCHINO[7] and CRYSTAL N PIPER[5]

[1]Religion and Medicine Research Center, [2]Health Education Department, School of Health, Baqiyatallah University of Medical Sciences, Tehran, [3]Qazvin Research Center for Social Determinants of Health, Qazvin University of Medical Sciences, Qazvin, Iran; [4]Duke University Medical Center, Durham and [5]Department of Public Health Sciences, College of Health and Human Services, University of North Carolina at Charlotte, Charlotte, NC, USA; [6]King Abdulaziz University, Jeddah, Saudi Arabia; and [7]Institute of Health Care, University of Malta, Malta

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Correspondence:
Dr Mohsen Saffari, Religion and Medicine Research Center, Baqiyatallah University of Medical Sciences Tehran, Iran; and, Health Education Department, School of Health, Baqiyatallah University of Medical Sciences, Tehran, Iran. Email: m.saffari@bmsu.ac.ir and saffari.ches@gmail.com

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SUMMARY AT A GLANCE

This study found that spiritual and religious beliefs explained a significant proportion of variance in of quality of life and health status amongst Iranian Muslims on haemodialysis after correcting for other factors. This needs more study and might suggest an intervention target.

ABSTRACT:

Aim: **The number of haemodialysis patients globally is increasing and spiritual resources may help overcome adjustment problems among such patients. This study examined the relationships between spiritual/religious, demographic and clinical variables and quality of life among Iranian Muslims undergoing haemodialysis.**

Methods: **Using a cross-sectional design, 362 haemodialysis patients were surveyed from three general hospitals located in Tehran, Iran. Spiritual coping strategies, Duke University Religion Index, EQ-5D 3L and a demographic questionnaire were administered. Hierarchical regression was used to identify predictors of quality of life and health status.**

Results: **The distribution of reported problems across dimensions of quality of life was: mobility (59.4%), usual activities (30.4%), self-care (21.3%), pain/discomfort (47.8%) and anxiety/depression (29.3%). Univariate analysis showed that factors such as age, sex, marital status, location, number of children, body mass index, serum albumin, having diabetes mellitus or other comorbidity, as well as spiritual/religious factors that were related to quality of life, health status or both. Regression models revealed that demographics, clinical variables and especially spiritual/religious factors explained about 40% of variance of quality of life and nearly 25% of the variance in health status.**

Conclusion: **Spiritual resources may contribute to better quality of life and health status among haemodialysis patients. Further longitudinal studies are needed to determine whether these associations are causal and the direction of effect.**

End-stage renal disease (ESRD) is a complex clinical condition that leads to considerable morbidity and mortality. In 2011, about 2 786 000 patients suffered from ESRD, a number that increases by 6% to 8% annually.[1,2] According to the US Department of Health and Human Services, the prevalence rate of ESRD from 1980 to 2009 increased near six times.[3] There are basically two treatment options for these patients: kidney transplant or dialysis. Over three-quarters of these patients worldwide receive peritoneal dialysis or haemodialysis (HD) and HD patients make up about 89% of dialysis patients.[1]

Adjusting emotionally to HD may be a difficult and complicated process that involves many changes. These include having to take time for dialysis treatments, making dietary modifications, restricting fluid intake and taking medications that may be irritating and unpleasant.[4] Such changes often lead to physical and psychological problems. Studies show that HD patients often suffer from pathological disorders such as anorexia, anaemia, skin problems, sexual dysfunction and arteriovenous fistula.[5,6] In addition, mental conditions such as depression and anxiety are prevalent.[7,8]

To overcome the problems associated with ESRD and HD treatment, coping behaviours are important. Spiritual forms of coping may be helpful for those who have strong religious/spiritual beliefs.[9] Spiritual coping has been shown to be effective in adapting to end-stage dialysis.[10] There are studies that have found positive relationships between spiritual coping and quality of life (QOL) among HD patients.[11,12] Researchers have found that such coping styles can mediate between disease stressors, health outcomes and QOL.[13]

Traditionally QOL has included physical, emotional, functional and social domains, but the role of spirituality has also played a part and may now be considered a component of QOL.[14] However, there is little evidence to support these views across various conditions and populations and more research is needed to better understand the relationships between religiosity/spirituality and health outcomes.

There are different definitions for religion and spirituality. While, religion has been defined as institutionally sanctioned beliefs and practices of a specific faith group, spirituality is considered a more basic concept than religiosity that helps people to find purpose in their life.[15] In other words, spirituality is a broader term and religion may represent a specific type of spirituality.[16] Interrelations between these two concepts have been shown in many studies[10,14] and their relations to QOL have been documented.[9,11,12,14] However, assessing relationships between religion/spirituality (R/S), health and quality of life among HD patients from various religions and cultures is essential.

The country of Iran has an ancient culture, where the majority of the population is Muslim, making this area of the world ideal for better understanding associations between religion/spirituality and quality of life among Muslim HD patients. In Islam, health is a blessing from God and disease is considered a type of Divine test.[17] Participating in spiritual and religious practices is recommended and claimed to enhance the ability of believers to cope with difficult diseases and situations.[18] According to recent data, more than 14 000 patients undergoing HD treatment live in Iran and the need for HD is increasing by 15% every year.[19,20] Therefore, documenting the relationships between R/S, quality of life and health outcomes in this growing population is important for developing psychosocial interventions to improve outcomes.

METHODS

Design and sample

A cross-sectional survey was conducted to collect data from three general hospitals during July and August 2012. These hospitals were located in Tehran, Iran. A convenience sampling method was used to identify participants. Sample size was calculated using Cohen's tables for correlation studies (Power = 95%, r = 0.2 and a two-tailed α = 0.05). The study was approved by Institutional Review Board of Baqiyatallah University of Medical Sciences. Approvals from ethical committees at each hospital were also obtained. Participation was voluntary. The purpose of the study was explained to participants and informed consent was obtained. Inclusion criteria were being Muslim; being a HD patient due to ESRD; aged 20 years and older; orientated to place, person and time; and able to speak and understand Farsi language. Patients with significant cognitive impairment were excluded from the study. Self-report questionnaires were administered face-to-face by trained researchers to participants during HD sessions. Each interview took approximately 15 to 20 min.

Measures

EQ-5D-3L

The EQ-5D-3L is a generic measure that assesses health status and quality of life. This measure was developed by EuroQol Group in 1990.[21] The measure has been used in patients with a wide range of diseases and treatments. This measure has been used in mailed surveys as well as in face-to-face interviews. The instrument consists of two parts. The first part (EQ-5D) involves five domains of health status: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each domain has a three-level response format that includes 'having no problems,' 'having some problems,' and 'having extreme problems.' The scale asks participant to select a statement in each domain that is most applicable to his/her current health status. The scoring system results in a total of 243 health states, based on a combination of responses to various questions. These scores can be converted into a single summary index using a formula that attaches values or weights to initial responses. The value sets derived from EQ-5D-3L are available only for several countries. Since Iran does not have population based utility weights, a robust valuation set (UK TTO set) for calculating EQ-5D index was adopted.[22] The second part of the scale is a Visual Analogue Scale (EQ-VAS) that allows respondents to score their current health status from 0 to 100. Validity and reliability of the measure has been documented in previous studies.[23,24] Two-week test-retest reliability of this measure was assessed in the present study, a kappa (k) = 0.83 in a sample of 15 HD patients. These participants were excluded from sample for the present analysis. Internal consistency of the scale in the main sample demonstrated a Cronbach's α of 0.83 and 0.78 for the EQ-5D and EQ-VAS, respectively.

Spiritual coping strategies

Baldacchinho and Buhagiar (2003) developed the spiritual coping strategies (SES) in English and Maltese languages.[25] The SES consists of 20 items with likert-type responses ranging from never used (0) to often used (3). The scale consists of both religious (nine items) and non-religious (11 items) coping strategies. Religious items are oriented towards individuals' attitudes regarding religious practices and relationship with God. The other 11 items are related to humanistic coping strategies that include relationships to self, others and nature. Total score is computed by summing the scores of all items. Although the original scale has a Judeo-Christian orientation, with permission from the author, the scale was slightly modified to address Islam religion. For example, since 'Receiving Communion' is not a religious ritual among Muslims, we replaced it with 'Vowing to God and Votive Offerings,' a practice that is popular among Muslims. Replacing 'church' with 'mosque or hosseinieh' was another modification made to the scale. The modified

version has been shown to have good validity and reliability.[26] Psychometric properties of the Spanish and Italian versions of SES are also acceptable.[27,28] The Cronbach's α of the entire scale in our study was 0.81, demonstrating internal consistency.

Duke university religion index

This scale evaluates religious beliefs and practices initially developed by Koenig *et al*. in 1997.[29] The Duke University Religion Index (DUREL) is a five question scale that consists of three parts. The first part has one item that measures organizational religiosity (attendance in religious meetings). The second part assesses non-organizational religiosity (private religious activities) with one item. The third part consists of three items that measure intrinsic religiosity (religious beliefs and experiences). This section asks participants to express agreement or disagreement to statements such as experiencing the presence of God in life, the role of religious beliefs in a person's general approach to life and trying to apply religion in all aspects of life. Parts 1 and 2 have a 6-level response option based on frequency of activities. The items in the third part have a 5-level response option that expresses agreement or disagreement. As suggested by the author, the score of each part is computed separately by reverse scoring each item. Summing up all items to create a total score is not recommended. The validity and reliability of the scale have been shown in the previous studies.[30,31] We examined the 2-week test–retest reliability of the scale in 15 HD patients, with kappa coefficients ranging from 0.78 to 0.86. The alpha values ranged from 0.79 to 0.86 for the DUREL's subscales in the main sample, demonstrating internal consistency.

Demographics and clinical variables

Demographic data collected included age, sex, marital status, years of education, job status, accommodation, number of children and duration of haemodialysis. In addition, clinical variables such as weight, height, leading cause of ESRD, comorbidity, serum albumin, haemoglobin and dialysis adequacy index (Kt/v) were obtained from medical records by trained researchers. The Kt/v was calculated using the second generation Daugirdas formula.[32]

Data analysis

Descriptive statistical analyses with means and standard deviations were computed for continuous variables. Categorical data were summarized with frequencies and proportions. χ^2 square test was used to compare categorical data. The Kolmogorov–Smirnov test was used to assess normality for continuous measures. Variables with non-normal distributions were converted to normal distributions by the logarithm transformation method. Leven's test was used to verify the assumption of homoscedasticity. Univariate analysis by Student's *t*-test and Pearson's product moment correlation was used to determine potential differences between variables. Variables with a $P < 0.15$ were entered in the regression model. Two hierarchical regression analyses were performed to identify variables predicting quality of life and health status. Based on results of univariate analysis we entered demographic variables (age, sex, marriage status, location, number of children when appropriate) in the first step. Then, in the second step we added clinical variables (BMI, Ktv, albumin, haemoglobin, leading cause of ESRD, comorbidity) to the model. The third step contained all prior variables plus the spirituality/religiosity scores of each subscale separately. Variance inflation factors and tolerance index were used to assess collinearity between predictors. Dummy coding was used to prepare binary categorical variables for entry into the regression model. Significance level was established at 0.05 (two-tailed). All statistical analyses were carried out using SPSS software for windows version 20 (IBM Corporation, Software Group, NY, USA).

RESULTS

Overall, 362 HD patients participated in the study, which was 89% of all those approached. The mean age of the sample was 57.81 (SD = 9.67) years; 53.9% of the participants were female; and 64.4% were married. Most of the participants were unemployed (90.1%). The average number of years spent in formal education was 7.83 (SD = 1.43). Regarding clinical characteristics, most patients (51.7%) were overweight and diabetes mellitus was the most prevalent cause of kidney disease (50.3%). The majority of the participants (91.7%) had some level of comorbidity with other diseases (see Table 1).

The univariate relationships between independent variables and outcome measures (quality of life and health status) are summarized in the Table 2. As shown in this table there is a significant difference between males and females in terms of quality of life ($P = 0.005$) but not health status. Married patients reported better health status than those who were not married ($P = 0.005$). Patients that lived in villages had higher QOL than did patients living in cities. Patients that reported diabetes mellitus as the cause of their kidney disease had worse health status compared to others. The EQ-5D index among people with other comorbid illnesses was lower than patients without comorbidity. Age was inversely related to quality of life and health status. The higher the patient's age the lower their quality of life and health status. Body mass index (BMI) was also inversely related to health status. In contrast, the number of children, serum albumin and subscale's average scores on SES and DUREL were positively related to EQ-5D and EQ-VAS scores.

Hierarchical regression models are presented in Table 3. Among demographic variables in step 1, age ($\beta = -0.313$) was the most influential predictor with a moderate effect. Marital status predicted health status ($\beta = 0.174$), but not QOL. Number of children was significantly related to both EQ-5D and EQ-VAS scores. This step explained about 12% of the variance in EQ-5D and about 9% of the variance in EQ-VAS scores. In step two, clinical variables were added to the models (EQ-5D, EQ-VAS), explaining about 7% and 4%, respectively, of the variances. The third regression model included R/S variables. This model explained nearly 40% of the variance in EQ-5D scores and 25% of the variance in EQ-VAS scores.

Reported problems assessed by the EQ-5D were in the areas of mobility (59.4%), performing usual activities (30.4%), self-care (21.3%), pain/discomfort (47.8%) and

Table 1 Demographic characteristics and clinical variables of the sample ($n = 362$)

Variables	n (%)/(M ± SD)
Age (M, SD)	57.81 ± 9.67
Sex	
Male	167 (46.1)
Female	195 (53.9)
Marital status	
Single	0 (0)
Married	233 (64.4)
Widowed	126 (34.8)
Divorced	3 (0.8)
Occupation	
Employed	36 (9.9)
Unemployed	326 (90.1)
Years of education	7.83 ± 1.43
Location	
City	341 (94.2)
Village	21 (5.8)
Number of children	3.66 ± 1.43
Duration of haemodialysis (months)	47.00 ± 44.92
Height (cm)	159.40 ± 7.88
Weight (kg)	64.35 ± 11.66
Body Mass Index (BMI)	
Low weight (≤18)	6 (1.7)
Normal weight (19 to 25)	169 (46.7)
Over weight (≥25)	187 (51.7)
Kt/v [(BUNpre-BUNpost)/BUNpre] × 100	1.33 ± 0.33
Serum albumin (g/dL)	3.98 ± 0.63
Haemoglobin (g/dL)	11.14 ± 1.67
Leading cause of kidney disease	
Diabetes mellitus	182 (50.3)
Hypertension	123 (34.0)
Glomerulonephritis	33 (9.1)
Other	24 (6.6)
Co-morbidity disease	
Yes	332 (91.7)
No	30 (8.3)

anxiety/depression (29.3%). There were significant differences between males and females in terms of usual activities and self-care ($P < 0.05$), so that females reported more problems in these dimensions than males (data not shown).

Correlations between spiritual coping scores with EQ-5D index scores ($r = 0.182$, $P < 0.001$) and EQ-VAS scores ($r = 0.131$, $P = 0.012$) revealed that the spiritual scores and these outcome scores were significantly correlated.

DISCUSSION

Our study revealed that spiritual coping and religiosity were significantly associated with quality of life and health status among HD patients. This is after controlling for sex, marital status, accommodation, number of children, BMI, serum albumin, leading causes of ESRD and comorbid medical illnesses.

Other studies have reported similar findings. For example, Ramirez *et al*. conducted a study that examined the relationship between religious coping, psychological distress and quality of life among Brazilian HD patients, finding similar results. In that study, investigators reported that religious coping may have helped to both reduce distress and increase QOL.[12] Also consistent with our results, Patel and colleagues found that religious beliefs may serve as a coping mechanism for ESRD patients to enhance their health related quality of life.[9] Such relationships have been reported in most studies of patients undergoing HD.[4,10,14] However, a few studies did not report positive relationships between spirituality/religion and QOL in HD patients.[11,33] This may partially be due to the complex nature of concepts such as spirituality and religion in different cultures and religious groups. Differences in types of measures and degree of life-threatening illness may also have influenced findings.

The results of the current study suggest that religiosity, especially religious coping and organized religiosity, play an important role in both quality of life and health status of HD patients. Green and *et al*. in a 2-year follow-up study also found that religious coping appeared to impact QOL compared to non-religious coping strategies in patients with emphysema.[34] Organizational religiosity includes participating in religious services and other types of religious social involvement.[30] This may facilitate coping with disease and ultimately result in a better sense of health, as many different religious coping behaviours.

Although, numerous studies have examined the role of spirituality and religiosity in the health of patients with life-threatening diseases, most are on patients with cancer or emerging diseases like AIDS.[35] Studies on patients from different religions and cultures are also limited. The majority of studies in this regard involve Christian patients. Muslims make up nearly one fourth of the world's population.[30] The relationships between religion and health could be very different in Muslim countries compared to Christian countries. Several studies among patients with in non-Muslim religions have not found significant relationships between religion and health.[11,33]

In regard to our findings being different depending on whether our health outcomes were assessed using the EQ-VAS or EQ-5D, Hauser and Walsh found that subjective experiences such as QOL that are assessed by different rating scales may result in different outcomes.[36] Moreover, such differences may be due to individuals' subjective experiences and expression of their QOL and perceived health status. Indeed, the EQ-VAS is often used to supplement measures of quality of life[21] and we can expect its results to differ to some degree from those using the EQ-5D. In our study the correlation between total scores on these scales was high (>0.70), but were still some differences between them. In addition, when the EQ-5D asks participants to select their health status using five dimensions, more details and accuracy is expected than when using only one overall dimension of health status. This difference has also been reported in other studies that used EQ-5D 3L to assess quality of life.[23,24]

Table 2 Associations of study's variables to quality of life and health status using univariate analysis ($n = 362$)

Variables	Quality of life (EQ-5D index)		Health status (VAS)	
	Mean ± SD/ R	*P*-value	Mean ± SD/ R	*P*-value
Age (M,SD)	–0.197	<0.001	–0.125	0.017
Sex				
Male	0.71 ± 0.33	0.005	64.01 ± 16.61	0.479
Female	0.59 ± 0.45		65.47 ± 21.72	
Marital status				
Married	0.67 ± 0.41	0.290	68.62 ± 21.23	0.005
Other	0.63 ± 0.40		62.68 ± 18.21	
Occupation				
Employed	0.69 ± 0.41	0.510	66.66 ± 12.64	0.547
Unemployed	0.64 ± 0.40		64.59 ± 20.14	
Years of education	0.053	0.319	0.043	0.417
Location				
City	0.63 ± 0.41	<0.001	64.57 ± 19.94	0.115
Village	0.87 ± 0.08		68.57 ± 10.14	
Number of children	0.149	0.005	0.157	0.003
Duration of haemodialysis (months)	0.016	0.762	–0.020	0.708
Body Mass Index (BMI)	–0.083	0.113	–0.143	0.006
Kt/v [(BUNpre-BUNpost)/BUNpre] × 100	0.088	0.095	0.024	0.654
Serum albumin (g/dL)	0.328	<0.001	0.176	0.001
Haemoglobin (g/dL)	0.096	0.067	–0.012	0.826
Leading cause of kidney disease				
Diabetes mellitus	0.63 ± 0.42	0.674	62.03 ± 20.27	0.007
Other	0.65 ± 0.39		67.60 ± 18.36	
Co-morbidity disease				
Yes	0.50 ± 0.41	0.044	60.50 ± 20.77	0.208
No	0.66 ± 0.40		65.19 ± 19.39	
Religious coping	0.188	<0.001	0.115	0.021
Non-religious coping	0.129	0.017	0.133	0.011
Organized religiosity	0.488	<0.001	0.220	<0.001
Non Organized religiosity	0.118	0.024	0.141	0.007
Intrinsic religiosity	0.107	0.043	0.191	<0.001

Mean ± SD, Independent sample *t*-test; R, Pearson's correlation test.

The significant difference in QOL between males and females is consistent with other research finding that QOL scores of females were lower than males.[8,12] Authors such as Lopez *et al*. believe that this difference is related to the depression dimension of QOL in HD patients.[37] Some studies, however, have not found any association between the QOL and gender in HD patients.[9,13] In a study using another quality of life measure (QLQ-C-30), diminished physical functioning among women was lower compared to men and this largely explained the gender difference in QOL overall.[38] The use of different measures with different dimensions of QOL assessed may help to explain these findings with regard to gender. In our study, there were considerable differences across dimensions of quality of life (usual activity and self-care) between males and females. Such differences have been shown in studies among people with other chronic diseases.[39,40]

Kimmel and colleagues have stated that the QOL in patients undergoing HD is similar to that of general populations.[41] However, the findings of our study suggest that QOL among HD patients is considerably different compared to people without life-threatening diseases. Our results are also comparable to those reported from other studies of HD patients.[7,9]

Although studies have suggested that time on HD or higher hemoglobin level may be associated with better QOL,[12,42] we found no correlation between these variables and QOL in the present study. Like other studies, we did find a positive association between serum albumin and health status.

The associations between marital status and number of children and QOL can be explained by greater social support. The positive effect of having a spouse on health-related quality of life has been documented in a previous study.[43] Ramirez *et al*. also reported that married HD patients had fewer depressive and anxiety symptoms.[12] The better QOL among married patients in those with other chronic illnesses has also been reported. For example, Miller *et al*. in a study on patients with oesophageal cancer found that married patients reported a higher baseline QOL than single patients.[44] Among Iranian populations, when patients come from villages or rural communities we expect that social support may be

Table 3 Hierarchical regression summaries of factors predicting quality of life and health status ($n = 362$)

Factors	DV: EQ-5D index				DV: (Health Status) VAS			
	B	Beta	SE B	ΔR^2	B	Beta	SE B	ΔR^2
Stage 1: Demographics								
Age	–0.13	–0.313**	0.002	0.134**	–0.058	–0.289**	0.012	0.099**
Sex (female = 1, male = 0)	–0.106	–0.130*	0.040		NS	NS	NS	
Marital status (married = 1, other = 0)	NS	NS	NS		0.706	0.174**	0.219	
Location (urban = 1, rural = 0)	–0.144	–0.082	0.087		NS	NS	NS	
Number of children	0.081	0.285**	0.016		0.322	0.237**	0.077	
	Adjusted $R^2 = 0.124$		F change = 13.831		Adjusted $R^2 = 0.091$		F change = 13.075	
Stage 2: clinical variables								
Body mass index (BMI)	–0.006	–0.057	0.005	0.077**	–0.049	–0.096*	0.026	0.047**
Kt/v	0.031	0.025	0.061					
Serum albumin (g/dL)	0.164	0.256**	0.032		0.365	0.120*	0.153	
Haemoglobin (g/dL)	0.009	0.036	0.012		NS	NS	NS	
Leading cause of kidney disease (DM = 1, Other = 0)	NS	NS	NS		–0.495	–0.127*	0.200	
Co-morbidity (Yes = 1, No = 0)	–0.054	–0.036	0.077		NS	NS	NS	
	Adjusted $R^2 = 0.191$		F change = 6.915		Adjusted $R^2 = 0.131$		F change = 6.460	
Stage 3: Spirituality and Religiosity								
Religious coping	0.355	0.419**	0.059	0.208**	1.223	0.302**	0.308	0.133**
Non-religious coping	0.125	0.172*	0.040		0.664	0.191**	0.203	
Organized religiosity	0.159	0.644**	0.015		.0340	0.288**	0.077	
Non Organized religiosity	0.117	0.135*	0.018		0.125	0.114*	0.092	
intrinsic religiosity	0.079	0.232**	0.017		0.536	0.331**	0.091	
	Adjusted $R^2 = 0.396$		F change = 24.844		Adjusted $R^2 = 0.255$		F change = 12.862	

*$P < 0.05$; **$P < 0.001$. B, unstandardized regression coefficients; Beta, standardized regression coefficients; DV, dependent variable; NS, non-significant at univariate analysis ($P > 0.15$); SE B, standard error of B; VAS, visual analogue scale.

greater than in urban populations. This is due to closer communications and stronger family ties among people in rural areas, as others have found.[45,46]

The present study has several strengths such as recruiting a relatively large sample as well as conducting face-to-face interviews to collect more complete and valid data. However, there are a number of limitations that need to be acknowledged. First, we used a convenience sampling method that could reduce the generalizability of the study's findings to other HD patients. Second, the cross-sectional design precludes any statements about causal associations between study variables. Intervention studies that compare spiritual coping interventions with other treatment strategies may help to sort out such causal questions. Finally, self-report scales were used to collect data that may introduce reporting and recall biases. Other more objective tools like family member or caregiver's reports could help address these biases.

These results suggest an important role for religion/spirituality in the QOL of patients undergoing haemodialysis. Socio-demographic variables such as religion/spirituality should receive more attention to identify predictors of quality of life and health status among these patients. Further transcultural studies are needed for representative samples of such patients, along with longitudinal follow-up and intervention studies, to better understand how R/S beliefs and coping influence QOL among patients from various cultures and religions.

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